

What is claimed is:

1. A syringe for use with a cartridge containing a liquid, the cartridge having a hollow body and being closed at one end with a piercable diaphragm and being closed at a second end with a plug, said diaphragm and said plug both creating a hermetic seal with said hollow body, the syringe comprising:

a syringe body having a hollow interior, an open proximal end and an oppositely spaced open distal end, and a means for receiving the cartridge;

a plunger slidably received within the syringe body at the proximal end;

a barrel slidably received in the hollow interior at the distal end of the syringe body, said barrel having an open end, said open end being positioned opposite a protrusion, said protrusion being adapted to pierce the diaphragm of the cartridge; and

a needle coupled to the open end of the barrel.

2. A syringe as claimed in claim 1 wherein the means for receiving the cartridge comprises a longitudinal slot located on the syringe body between the open proximal end and the oppositely spaced open distal end.

3. A syringe as claimed in claim 1 further comprising an o-ring positioned on the barrel whereby said o-ring creates a removable seal between the barrel and the syringe body.

4. A syringe as claimed in claim 1 wherein the plunger further comprises a means for providing a breakaway feature.

5. The syringe assembly as claimed in claim 4 wherein the means for providing a breakaway feature includes a line of weakness at a predetermined location on the plunger.

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6. A syringe as claimed in claim 1 further comprising a means for retracting the needle body inside the syringe body, said means comprises:

5 a barbed member carried by the protrusion, said protrusion and said barbed member having concentric hollow interiors;

10 and wherein said barrel further comprises a concentric bore and distal aperture, said bore and aperture being aligned with the hollow interiors of the protrusion and barb; said barb, protrusion and barrel being in fluid communication so that fluid from the cartridge may flow to the needle, said needle being attached by a means to the open end of the barrel;

15 a gripping feature located on the plunger, said gripping feature adapted to engage the barb, whereby such engagement occurs when the plunger is fully compressed in the syringe body.

7. A syringe assembly as claimed in claim 1 wherein the syringe body further comprises a finger rest and a handle adjacent to said finger rest, said finger rest being adjacent to the proximal end.

8. A syringe assembly as claimed in claim 1 wherein the plunger further comprises a looped member.

9. A syringe assembly as claimed in claim 1 wherein the body further includes a biasing means whereby the plunger is self-aspirating.

5 10. A syringe for use with a cartridge containing a liquid, the cartridge having a hollow body and being closed at one end with a piercable diaphragm and being closed at a second end with a plug, said diaphragm and said plug both creating a hermetic seal with said hollow body, the syringe assembly comprising:

a syringe body having a hollow interior, an open proximal end and an oppositely spaced open distal end, and a means for removably receiving the cartridge;

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a barrel slidably received in the hollow interior at the distal end of the syringe body, said barrel comprising a hollow interior, a first open end and a second open end, said second open end comprises a protrusion adapted to pierce the diaphragm of the cartridge;

20 a needle coupled to the open end of the
 barrel.

11. A syringe as claimed in claim 10 wherein
the means for receiving the cartridge comprises a
longitudinal slot located on the syringe body between the
open proximal end and the oppositely spaced open distal
end.

12. A syringe for use with a cartridge containing a liquid, the cartridge having a hollow body and being closed at one end with a piercable diaphragm and being closed at a second end with a plug, said diaphragm and said plug both creating a hermetic seal with said hollow body, the syringe assembly comprising:

a syringe body having a hollow interior, an open proximal end and an oppositely spaced open distal end, and a longitudinal opening;

10 a plunger slidably received by the syringe
body at the proximal end;

a barrel slidably received in the hollow interior at the distal end of the syringe body, said barrel comprising a hollow interior, an open end and an oppositely positioned protrusion, said protrusion being adapted to pierce the diaphragm of the cartridge;

a sealing means in communication with the barrel and the syringe body;

20 a needle coupled to the open end of the barrel.

13. A syringe as claimed in claim 10 further comprising an o-ring positioned on the barrel whereby said o-ring creates a removable seal between the barrel and the syringe body.

14. A syringe as claimed in claim 10 wherein the plunger further comprises a means for providing a breakaway feature.

15. The syringe assembly as claimed in claim 14 wherein the means for providing a breakaway feature includes a line of weakness at a predetermined location on the plunger.

16. A syringe as claimed in claim 10 further comprising a means for retracting the needle body inside the syringe body, said means comprising:

5 a barbed member carried by the protrusion, said protrusion and said barbed member having concentric hollow interiors;

10 and wherein said barrel further comprises a concentric bore and distal aperture, said bore and aperture being aligned with the hollow interiors of the protrusion and barb; said barb, protrusion and barrel being in fluid communication so that fluid from the cartridge may flow to the needle, said needle being attached by a means to the open end of the barrel;

15 a gripping feature located on the plunger, said gripping feature adapted to engage the barb, whereby such engagement occurs when the plunger is fully compressed in the syringe body.

17. A syringe assembly as claimed in claim 10 wherein the syringe body further comprises a finger rest and a handle adjacent to said finger rest, said finger rest being adjacent to the proximal end.

18. A syringe assembly as claimed in claim 10

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wherein the plunger further comprises a looped member.

19. An aspirating disposable syringe assembly as claimed in claim 10 wherein the body further includes a biasing means whereby the plunger is self-aspirating.

20. A syringe for use with a cartridge containing a liquid, the cartridge having a hollow body and being closed at one end with a piercable diaphragm and being closed at a second end with a plug, said diaphragm and said plug both creating a hermetic seal with said hollow body, the syringe assembly comprising:

a syringe body comprising a generally cylindrical tube having a hollow interior, an open proximal end and an oppositely spaced open distal end, and a longitudinal opening;

a plunger slidably received by the syringe body at the proximal end;

a barrel slidably received in the hollow interior at the distal end of the syringe body, said barrel comprising a hollow interior, an open end and an oppositely positioned protrusion, said protrusion being adapted to pierce the diaphragm of the cartridge;

a sealing means in communication with the barrel and the syringe body;

a needle coupled to the open end of the barrel; and

a means for retracting the needle inside the body, said means comprising:

a barbed member carried by the protrusion, said protrusion and said barbed member having concentric hollow interiors;

and wherein said barrel further comprises a concentric bore and distal aperture, said bore and aperture being aligned with the hollow interiors of the protrusion and barb; said barb, protrusion and barrel being in fluid communication so that fluid from the

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cartridge may flow to the needle, said needle being attached by a means to a distal end of the barrel;

35 a gripping feature located on the plunger, said gripping feature adapted to engage the barb, whereby such engagement occurs when the plunger is fully compressed in the syringe body.

21. A syringe assembly as claimed in claim 20 wherein the syringe body further comprises a finger rest and a handle adjacent to said finger rest, said finger rest being adjacent to the proximal end.

22. A syringe assembly as claimed in claim 20 wherein the plunger further comprises a looped member.

23. An aspirating disposable syringe assembly as claimed in claim 20 wherein the body further includes a biasing means whereby the plunger is self-aspirating.

24. A syringe as claimed in claim 20 wherein the plunger further comprises a means for providing a breakaway feature.

25. The syringe assembly as claimed in claim 24 wherein the means for providing a breakaway feature includes a line of weakness at a predetermined location on the plunger.

26. A cartridge for a syringe having a barrel with a protrusion, said drug cartridge comprising;

5 a vial, said vial generally a hollow tube with opposing open ends;

 a piercable diaphragm, wherein said diaphragm comprises a means to hermetically seal the vial at one end, whereby said diaphragm is adapted to be pierced by the protrusion of the barrel;

10 a plug, wherein said plug comprises a means to hermetically seal the vial at a second end, and said plug further comprises a means for engaging the gripper of the plunger.

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